

## **A Comparative Analysis of Production Sharing Contract and Gross Split (Case Study: Tango Work Area)**

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### **ABSTRACT**

*The main theme of this research regards the recent fiscal term changes in the Indonesia oil and gas industry. Indonesia is not a rich oil or gas country, but the consumption level is increasing sharply compared to the production rate. One of the main issues for the government is the low rate of exploration activity. In January 2017, the Ministry of Energy and Mineral Resources officially announced Minister Regulation No.08/2017, with revision No.052/2017 in August 2017, which is intended to boost oil and gas investment in Indonesia by increasing the efficiency and effectiveness of the production share between the government and contractors. The research goal of this paper is to provide information on whether Gross Split is better than Production Sharing Contracts (PSCs) from contractors' perspectives. The research was conducted in the Tango Block, which is run by PT Tango Indonesia; it assesses the economic evaluation of contractors' and government shares and also examines the qualitative comparative for both types of petroleum contracts fiscal terms.. In conclusion, PSC Gross Split is favourable for the government, while the excessive risks regarding profitability resulting from risk sharing is unfavourable for contractors.*

*Keywords: Indonesian PSC; Indonesian Gross Split; Oil and Gas*

### **INTRODUCTION**

During the past decades, the upstream oil and gas industry has become the driving force for the Indonesian economy; the high level of government income from the sector has helped development to take place. The oil and gas industry is able to create many jobs, both directly and indirectly. In 2015, the Indonesian Petroleum Association estimated that there were around 200 to 300,000 workers in the industry, consisting of permanent employees, contract employees and employees working in subcontractor companies. Most are trained personnel who come from vocational or technical schools.

The growth and development of the upstream oil and gas sector also has a positive effect on other industries, as can be seen from the high utilization of domestic components, which has been on average above 50% over the past 5 years. Governance of the oil and gas industry in one country will be very different from that in another (Ghandi & Lin, 2014; Kellas, 1988; Lubiantara, 2012) because there are differences between the regulation of the roles and responsibilities of at least three functions, namely policy, which is the responsibility of the ministry; regulation, which is the responsibility of the directorate; and commercial functions, which are responsibility of the national and international oil and gas

companies. Norway and Brazil separate these three functions: in these two countries the policy functions are handled by the Ministry of Oil and Energy; the regulation functions by the Directorate of Petroleum; and the commercial functions is carried out by the national oil companies, together with private companies. However, in some countries such as Saudi Arabia and Malaysia, there is no strict separation between the three functions; the state oil and gas company plays a very dominant role, so that besides being responsible for commercial functions, it is also responsible for the regulatory functions. In developing countries, the commercial role or function is generally carried out by the state oil and gas companies. On the other hand, in countries such as Australia, the United States, Canada and the United Kingdom, the state is not directly involved in the upstream oil and gas business; these countries do not have state oil and gas companies, so all commercial functions are completely carried out by the private sector.

The world oil price plummeted in 2014, forcing oil and gas contractors to reduce their production and exploration activities. This situation has clearly disrupted the government's efforts to fulfill the domestic needs for energy. The Satuan Kerja Khusus Pelaksana Kegiatan Usaha Hulu Minyak dan Gas Bumi (SKK Migas) annual report of 2017 stated that Indonesian oil and gas potential reserves lie in remote areas which are hard to reach, with the current oil and gas prices helping to decrease investors' interest in investing in Indonesia (SKK Migas, 2017). During the period 2014 to 2017 there are only 11 working areas had been successfully contracted (Komite Eksplorasi Nasional, 2017). Aside from price issue, the Survey Policy Perception Index 2017 found that Indonesia has several other obstacles to handle. Based on the survey, Indonesia ranked 79 out of 96 countries, or was the lowest in the Southeast Asia region (Stedman & Green, 2017), as the least attractive country for investors to invest.

The Indonesia government is trying in various ways to improve the oil and gas investment climate and to make it attractive again. One of these ways is changing the cost recovery contract sharing scheme into a gross split sharing scheme. Oil and gas contractors also need to improve their organizations by increasing the efficiency of exploration and production activities through robust work planning, with rapid implementation and utilization of the appropriate technology available. On the other hand, the community must be wiser when using oil and gas fuels with this synergy in order to achieve Indonesia's energy security and independence in the future.

The breakthrough by the Ministry of Energy and Mineral Resources by formalizing the Gross Split scheme expected to be the best solution and an improvement on the PSC scheme. This scheme is the most significant change since Indonesia started using production sharing contracts back in the 1960s. The government also promises that its implementation will be easier and that it will reduce bureaucracy, which was one of the main obstacles to the previous scheme, because it took a very long time to go from exploration to the production stage (BUMI Buletin, 2017).

Whether the launch of the Gross Split scheme will spur industrial investment in Indonesia's upstream oil and gas industry will certainly depend on the ability of oil and gas PSC contractors to manage costs well by taking into account factors such as cost and risk management, and obtaining the best technology at the best price. Bulletin Bumi also reported that the goal of Gross Split is to encourage exploration and exploitation efforts

that are more effective and faster, and expected to encourage oil and gas contractors and oil and gas supporting industries to be more efficient, so that they will be able to deal better with periodic oil and natural gas price fluctuations. From the point of view of the business process, this mechanism encourages upstream oil and gas contractors and SKK Migas to be more simple and accountable, thus the bureaucratic and time-consuming procurement system can be simplified. But the most important goal is to encourage oil and gas upstream contractors to manage their operating costs and investments.

This research compares the standard PSC and the gross split PSC, in order to demonstrate which of these regulations is better and more beneficial to both government and contractors. The findings will be useful to oil and gas investors, policymakers and other stakeholders within or outside the government. It is hoped that the research will provide valuable information from the comparative analysis of the fiscal terms, and will make a positive contribution to the industry, stimulating future improvements that will eventually increase the sustainability of the Indonesian oil and gas environment.

## LITERATURE REVIEW

The oil and gas industry has a unique business model; in general this is differentiated by two service contract systems: the production sharing contract and the service contract. With regard to these two basic differences, their application differs from one country to another (Yúnez & Chapa, 2017). Indonesia utilized Production Sharing Contracts from 1966 (Rinto Pudyantoro, 2015). One of the major differences in the Indonesian PSC model was the “First Tranche Petroleum” concept; no similar model has been found in any other oil or gas producing country. Beside the agreement between the government and the contractors, another integral part of oil and gas contracts is the accounting mechanism; how the accounting procedure is specifically regulated in contracts (Lubiantara, 2012). Gross split officially replaced the PSC model on 16 January 2017 (Menteri Energi Dan Sumber Daya Mineral, 2017); however, there are still some areas that are unclear for both SKK Migas and contractors (Roach & Dunstan, 2017).

Ryan Patricia A and Ryan Glenn P (2002) concluded that the views of academics and senior financial managers of Fortune 1000 companies on basic capital budgeting techniques are in stronger agreement (Ryan & Ryan, 2002), since it is possible to survey in absent of expensive technology. Another surveys conducted in different countries and across industries (Batra & Verma, 2014; Block, 2005; Kester et al., 1999; Tomasz Wnuk-Pela, 2014; Truong, Partington, & Peat, 2008) also support this argument. Investment in the oil and gas industry requires a substantial investment (Sabet, Agha, & Heaney, 2018). Investors have to calculate all the risks, therefore it is common that the oil and gas industry also calculates uncertainty factors, such as policy uncertainty, whose level is very high in Indonesia. Therefore, investors will minimize risk by undertaking an investment selection process, especially under current conditions (Tang, Zhou, & Cao, 2017). Sensitivity analysis is therefore required to minimize the errors that might occurs from evaluation based on the traditional capital budgeting method (Sabet & Heaney, 2017).

Project management also plays a vital role in the financial growth of the oil and gas industry; successful project management will influence the success of the corporate financial performance (Salazar-Aramayo, Rodrigues-da-Silveira, Rodrigues-de-Almeida,

& de Castro-Dantas, 2013). If the application of Gross Split is clear from the aspects of regulations, tax, asset rent and asset ownership, amongst others, then this new scheme will surely attract new investors and rejuvenate the oil and gas industry in Indonesia (Daniel et al, 2017), and reverse the declining economic trend in the country (Iswahyudi, 2016).

## METHODOLOGY

All the qualitative data were collected from Tango Indonesia with regard to Tango PSC in Indonesia. These data were selected due to the fact that the government is giving all oil and gas contractors under the PSC regime the freedom to choose to continue with PSC cost recovery or to join the new PSC Gross Split fiscal regime. The Tango exploration stage project started in 2014, and expected to sign their first Production on Development (POD) in 2018. After gathering all the data, then the economic valuation progress started; this was to obtain the net present value, the internal rate of return and the payback period. These three criteria are the main indicators of economic feasibility in the Tango Block. To strengthen the results a scenario analysis will be added regarding the volatility of the commodity price and the production profile. Finally, it will be established whether PSC Cost Recovery or PSC Gross Split is better, based on results, and which is the more economically feasible.

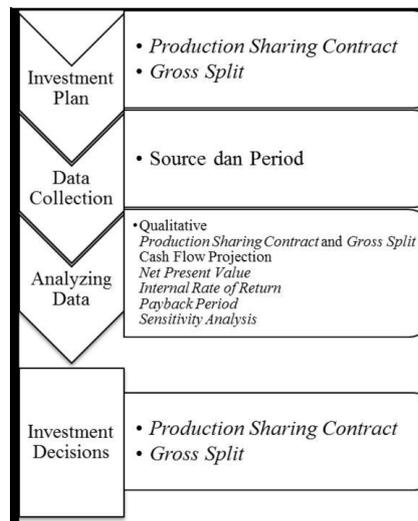


FIGURE1. Research Methodology

## DATA COLLECTION AND ANALYSIS

The POD project will commencement in 2018, with a 5 year development period, and is expected to end in 2037, because the contracts for Tango Indonesia will then be ending.

The revenue projection for Tango Indonesia on upstream oil and gas investment activities in its working area comes from oil and gas sales. The calculation of petroleum sales is

based on their weight in barrel units, while sales of liquefied natural gas are sold on the basis of the units of energy that can be produced. Related to the production projection for the Tango working area during the PSC contract until 2037, it is planned to drill 3 wells. And expected a peak production period in 2024 and 2025, but will then see a significant decrease in production year on year. Based on the analysis of the related departments, due to the natural processes in the Tango Work Area yields are predicted to start to decline after 3 years of plateau period, together with reserves and declining reservoir pressures resulting from the drilling activities of sources from various wells, as can be seen in Figure 2. Petroleum production is express in BOPD and gas unit in million standard cubic feet.

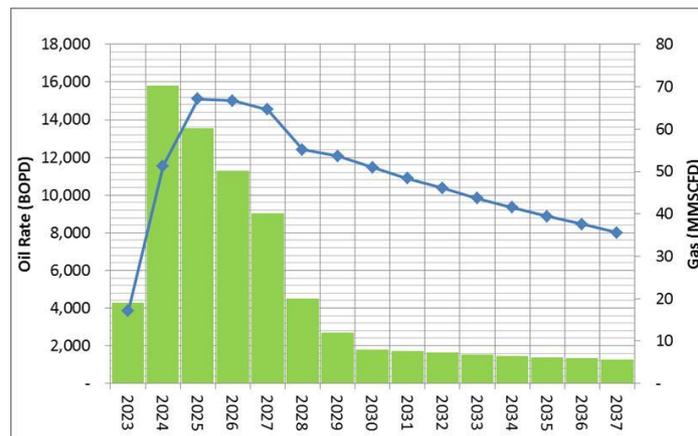


FIGURE 2. Production Profiles

The data gathered from Tango Indonesia, together with additional assumptions, are as follows:

- a. First POD in 2018
- b. First production in 2023
- c. Production phase until 2037
- d. Oil price flat at \$63/barrel; gas price flat at \$5.28
- e. DMO holiday 5 years
- f. Effective tax of 44%
- g. Working area offshore (h>1000m)
- h. Reservoir (>2500m)
- i. New frontier infrastructures
- j. Conventional reservoir types
- k. CO2 between 10% and 20%
- l. H2s between 100 and 300
- m. Specific oil gravity over 25
- n. Local content between 50% and 70%

Primary production phase *Indonesian PSC* As explained earlier, geological and fiscal concerns are the most important aspects of how attractive this industry is to a country, because both aspects are the main influences on the profitability prospects for investors.

The main components of the standard PSC regime are taxes, profit oil and cost recovery (Johnston, 2017). Indonesian standard PSC has evolved from 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> generation versions (Lubiantara, 2012); this paper focuses on the 3<sup>rd</sup> generation. In this generation of Indonesian PSC, both the government and contractors have the right to receive 20% of gross revenue immediately before the cost recovery calculation; this mechanism of first tranche petroleum (FTP) differs from the mechanism that adopted by several countries that using royalty payments. The split between the government and contractor based on their oil split percentage.

The Indonesian government has to ensure that domestic energy consumption is fulfilled; therefore, they introduced the domestic market obligation (DMO), which guarantees supply to the domestic market. Contractors have to sell their oil at the price that has been determined in the PSC contract; usually, the government grants 5 years DMO holiday, which means it will pay the DMO at market value. DMO also stipulated under Indonesian Law of Oil and Gas No.22/2001.

According to Government Regulation No. 79/2010, the effective tax for oil and gas contractors who signed a PSC contract after 2010 is 40%. The Indonesian PSC scheme is available in appendix A.

*Indonesian Gross Split* The most distinctive difference between PSC and Gross Split is that the cost recovery mechanism no longer exists, and the split shared from gross production. The base split for the government and contractors is 57:43 for oil, and 52:48 for gas. The Gross Split regulation was made official under Ministry Regulation No. 08/2017 on 16 January 2017, but on 29 August 2017 the government revised this under Ministry Regulation No. 052/2017. With regard to the regulation applied, the split can be increased or decreased depending on variable or progressive split. There are 10 components of variable splits which will adjust the split, based on field status, field location, reservoir depth, infrastructure availability, reservoir type, carbon dioxide content, hydrogen sulfide content, oil specific gravity, local content and production stage, as can be seen in appendix B.

Another splits adjustments in Gross Split scheme is according to the progressive split mechanism, such as commodity price and accumulative production, this splits reviewed annually. The government has the right to increase or decrease any gross split contract through the Ministry of Energy and Mineral Resources, without any limitation. The gross split scheme shown in appendix C.

*Previous Research* Since the regulation was newly inaugurated in 2017, few studies have compared Indonesian PSC with gross split. Research by Giranza and Bergmann (2017) (Giranza et al, 2017) concluded that gross split is no superior to the previous fiscal regime, even though it promised the government a better structure of fiscal progressivity, and for contractors it promised a much simpler administrative process. Since the risks for the contractor are greater, it has created a risk imbalance.

The idea of excluding the cost recovery mechanism has been open to discussion, since it caused negative image to the business model (Lubiantara, 2012; Rinto Pudyantoro, 2015; Sidik, 2009).

## RESULTS

The calculation of the government and contractor shares, based on the Indonesia PSC and gross split schemes, are summarize in tables 1 and 2.

Table 1. Government Economic Results

Indicator	Unit	PSC Cost Recovery	Gross Split
Gross Share	M \$	882,029	1,042,722
DMO	M \$	36,911	52,664
Tax	M \$	635,626	557,989
GOI Take	M \$	1,554,566	1,653,376
% Gross Revenue	%	31.49	33.49

The Gross Split mechanism provides better results for the government. But similar to the contractors' results, this economic valuation from the government perspective also did not show any extreme comparative results. The economic results for contractors' summarized in table 2 below.

Table 2. Contractors' Economic Results

Indicator	Unit	PSC Cost Recovery	Gross Split
Contractor NPV 2018 forward	M \$	67,980	50,731
Contractor IRR 2018 forward	%	13.39	12.34
Contractor Payout Ratio		7.92	8.21

Contrary to the government results, in those of the contractors it is found that PSC with the cost recovery mechanism is a better offer compared to the PSC Gross Split model. But none of the indicators show any extreme results compared to each other, and the payback period is different by only 0.29 years, in other words between 3 and 4 months.

Sensitivity analysis was conducted and examined the implications of changes in commodity prices, since these are beyond contractors' and government power, and are volatile. The only commodity price calculated is the oil price, since that of gas cannot be determined because no buyers are as yet projected, and in line with the PSC Gross Split, the split only covers f the oil price. In this paper the gas price is indexing 6% to the oil price were taken from the similar contract in Tango Indonesia; details are available in appendix D. There are slight differences in the results between PSC Cost Recovery and PSC Gross Split. The PSC Cost Recovery results from the contractors' side show the NPV in negative

figures if the price falls to \$50/barrel, while for PSC Gross Split a negative figure is already shown when the oil price is at \$55/barrel.

### MANAGERIAL IMPLICATIONS

One managerial implication from these preliminary findings is that the cash flow of contractors in early production stages will be negative. Due to large amount of capital spent on ways of discovering new potential fields, no profits will be made at this stage. For both PSC with cost recovery and Gross Split, any losses within the first 5 years could be carried forward in order to deduct the taxable income. From the government perspective, it still receives revenue from contractors in the form of a certain proportion of investments. The government also receives funds from the signature bonuses that must be paid prior to the contract execution or award process. The Gross Split mechanism allows contractors to obtain higher revenue compared to PSC cost recovery. This is because, as explained earlier, the government will grant an additional contractor split for certain field conditions. Indonesian government will not be burdens anymore to cover the cost recovery mechanism. Another benefit for the government is that its income will become more certain compared to PSC with the cost recovery mechanism. If contractors accept the gross split mechanism, it should be considered as cost effective, and an efficient way to exploit potential fossil fuels.

Administration improvements should be considered by contractors, since time efficiency is also important in potentially raising revenues. The number of formalities required in the previous regime was up to 373 upstream-related permits, divided into four business stages. The survey and exploration stages required 117 permits, the development and construction stage 137 permits, the production stage 109 permits, after the production stage only 10 permits were required. Gross Split, on the other hand, only requires a total 16 permit formality processes, which consist of four permits at each stage.

### CONCLUSION

In conclusion, the new Gross Split mechanism is not favorable to contractors, in line with the case study of Rokan PSC by Giranza and Bergmann in 2017 (Giranza et al, 2017). The study also obtains similar results to those in relation to Offshore North West Java (ONWJ), furthermore in Bergmann reported that Sanga Sanga and South East Sumatera, in a study conducted by Wood Mackenzie (2017). The calculation of each block or working area will be different, due to the characteristics of the fields. This study did not consider ministerial discretion, since it was unable to define it.

Although the government has succeeded in reducing the formality processes. The gross split regulator is still at ministry level. The government should upgrade this regulation to a higher level, learning from the long process of the Masela case. If the regulation is upgraded into a higher level, it will not only solve the overlapping issues, but will also provide assurance to potential investors to invest in Indonesia, specifically in the oil and gas industries.

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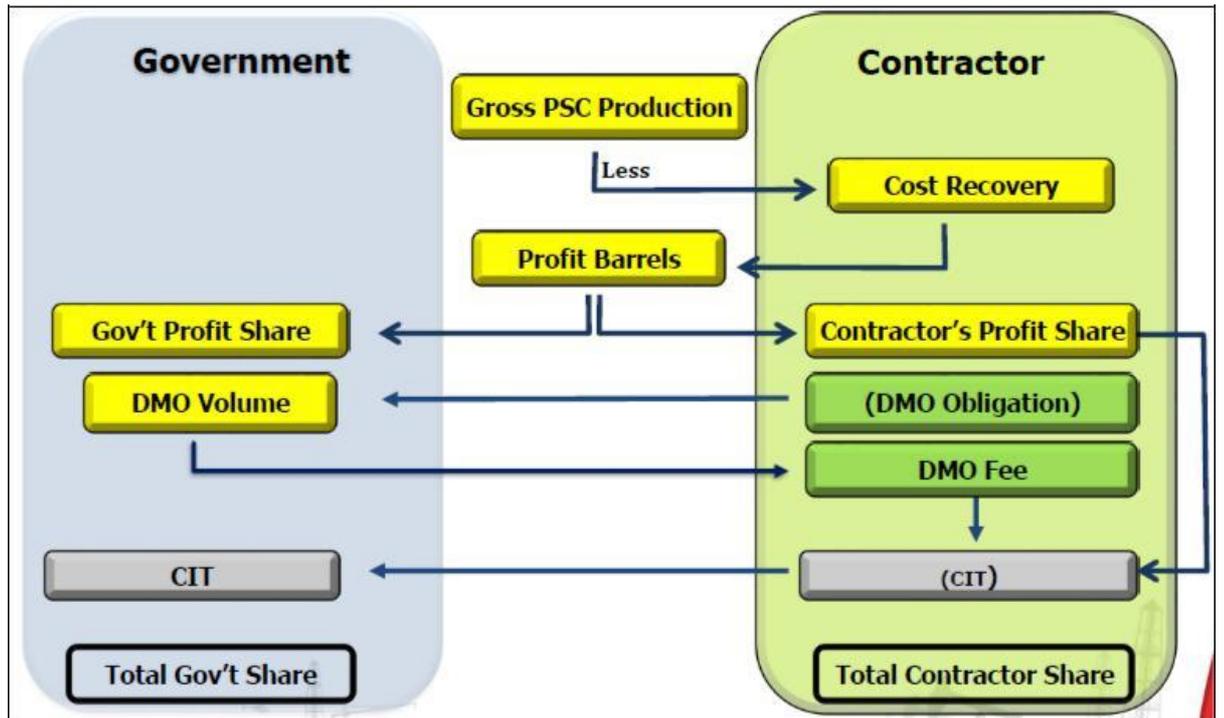
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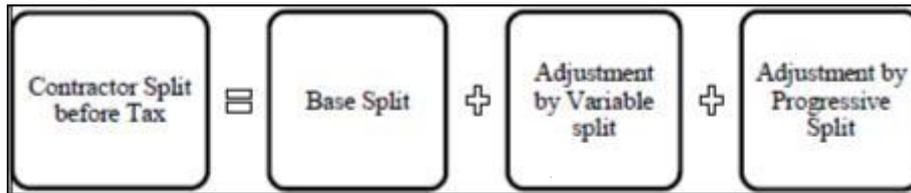
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APPENDIX A



**APPENDIX B**

**Base Split**



**Variable Split**

Field Status	Contractor Split
POD I	5%
POD II dst	3%
No POD	0%
Reservoir Depth	Contractor Split
> 2500	1%
<=2500	0%

Infrastructure	Contractor Split
New Develop	0%
New Frontier Onshore	4%
New Frontier Offshore	2%

H2S (ppm)	Contractor Split
< 100	0%
100 <= x < 1000	1%

Field Location	Contractor Split
Onshore	0%
Offshore (0<h<=20m)	8%
Offshore (20<h<=50m)	10%
Offshore (50<h<=150m)	12%
Offshore (150<h<=1000m)	14%
Offshore (h>1000m)	16%

Reservoir Condition	Contractor Split
Conventional	0%
Non Conventional	16%

CO2 (% mole)	Contractor Split
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1000 ≤ x < 2000	2%
2000 ≤ x < 3000	3%
3000 ≤ x < 4000	4%
≤ 4000	5%

≤ 5%	0%
5% < x ≤ 10%	0,50%
10% < x ≤ 20%	1%
20% < x ≤ 40%	1,50%
40% < x ≤ 60%	2%
x ≤ 60	4%

Local Content	Contractor Split
30% <	0%
30% ≤ x < 50%	0,50%
50% ≤ x < 70%	1%
70% ≤ x < 100%	1,50%

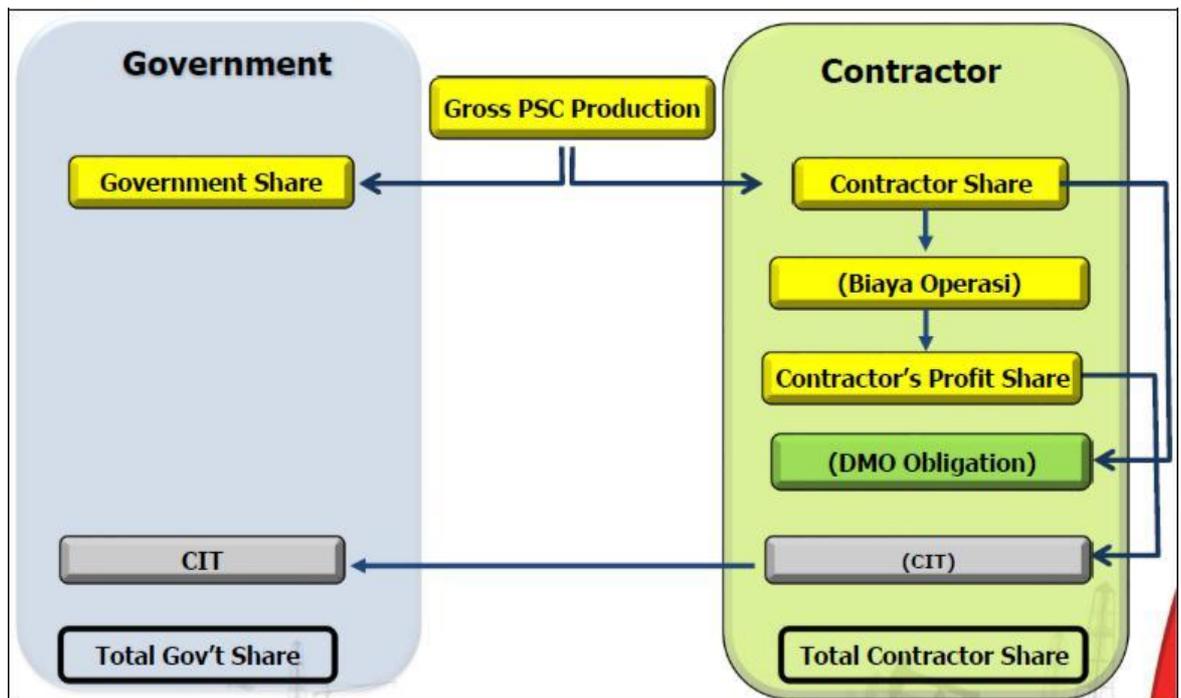
Oil Specific Gravity	Contractor Split
< 25	1%
> 25	0%

Production Stage	Contractor Split
Primary	0%
Secondary	6%
Tertiary	10%

**Progressive Split**

Cummulative Prod (MMBOE)	Contractor Split	Gas Price	Contractor Split	Oil Price
< 30	10%	< AS\$ 7 MMBTU		
30 <= x < 60	9%			
60 <= x < 90	8%	AS\$ 7 <= price < 10 MMBTU	0%	
90 <= x < 125	6%			
125 <= x < 175	4%	>= AS\$ 10 MMBTU		
> = 175	0%			

**APPENDIX C**



## APPENDIX D

Price (US\$/bbl)	Contr IRR GS	Contr IRR PSC	Contr NPV GS (M\$)	GOI Take GS	GOI Take PSC	Contr Net Share GS	Contr NPV PSC (M\$)
30	-8.6%	-2.50%	(200,627)	15.88%	12.76%	0.00%	(178,286)
35	0.9%	4.00%	(143,262)	17.95%	13.35%	2.20%	(107,780)
40	3.2%	6.42%	(113,756)	22.48%	17.43%	4.30%	(67,517)
45	6.0%	8.28%	(72,428)	25.07%	21.19%	7.38%	(33,929)
50	8.3%	9.84%	(32,536)	27.40%	24.61%	10.13%	(3,260)
55	9.5%	11.41%	(9,675)	30.79%	27.43%	11.17%	29,901
60	11.3%	12.69%	28,197	32.55%	30.05%	13.26%	58,820
65	13.0%	13.84%	65,771	34.08%	32.39%	15.09%	86,677
70	13.7%	14.97%	83,270	36.80%	34.41%	15.35%	115,400
75	15.1%	16.13%	119,716	38.00%	36.10%	16.80%	146,271
80	16.5%	17.23%	156,214	39.06%	37.61%	18.11%	177,146
85	16.9%	18.29%	168,952	41.39%	38.97%	17.91%	208,025
90	18.1%	19.30%	204,289	42.25%	40.20%	18.98%	238,786
95	19.3%	20.12%	239,627	43.04%	41.41%	19.95%	266,355
100	19.5%	20.92%	247,571	45.13%	42.51%	19.46%	293,914
105	20.5%	21.68%	281,266	45.79%	43.52%	20.27%	321,466
110	21.5%	22.42%	314,829	46.39%	44.45%	21.02%	349,010
115	24.0%	23.13%	409,391	44.20%	45.32%	24.47%	376,548
120	24.9%	23.82%	445,316	44.71%	46.11%	25.11%	404,080